

## CHAPTER 4

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### Description of the Project

*The Build Alternative, commonly referred to as the Kirkland Nickel Project, was designed to improve safety and mobility throughout a 7.6-mile section of I-405 in the Kirkland area, between the SR 522 and SR 520 interchanges. This project description provides an overview of the project's principal features as well as other features that are necessary to support these improvements.*

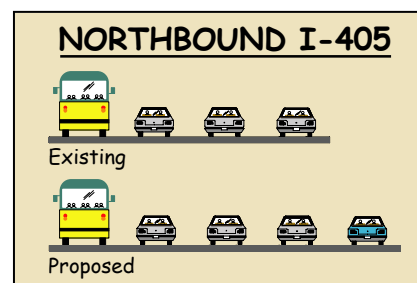
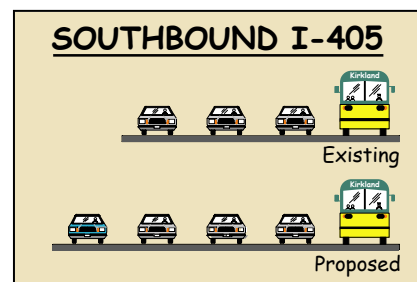
#### **What are the principal features of the Kirkland Nickel Project?**

There are three basic construction elements to the project. They include:

- A northbound general-purpose lane will be constructed from the I-405 and NE 70th Street interchange to the I-405 and NE 124th Street interchange;
- A southbound general-purpose lane will be constructed from the I-405 and SR 522 interchange to the I-405 and SR 520 interchange;
- I-405 at the NE 116th Street interchange will be reconstructed, realigned, and reconfigured;

Other features of the project include:

- Interchange improvements will be made to NE 85th Street and NE 116th Street;
- Stormwater management facilities will be constructed to provide water quality treatment and detention and conveyance system upgrades;
- Context Sensitive Solutions (CSS) will be implemented during the project to incorporate the elements of mobility, safety, environment, and aesthetics throughout the project; and
- Measures will be implemented that will avoid or minimize impacts or compensate for unavoidable effects to the environment.



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#### **What is a general-purpose lane?**

General-purpose travel lanes, in contrast to high-occupancy vehicle (HOV) lanes, have no restrictions on the number of vehicle passengers.

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#### **What are Context Sensitive Solutions?**

Context Sensitive Solutions (CSS) incorporate community values on aesthetics, the environment, mobility, and safety. WSDOT incorporated CSS into the design of the facility by working with local agencies and citizens on the "look and feel" of the project design.

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**What are high accident locations?**

High Accident Locations are defined as locations less than a mile long that have experienced a higher than average rate of accidents during the previous 2 years.

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**What is a single point urban interchange?**

In a single point urban interchange, left-turn movements are brought to a "single point" at the center of the interchange. Opposing left-turn movements are then completed simultaneously with a traffic signal. Since this type of interchange can be constructed with minimal right of way, it is ideal for urban areas.

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**What benefits will the Kirkland Nickel Project provide?**

The Kirkland Nickel Project will provide many short- and long-term benefits to improve access and mobility within this section of the freeway. Some of these benefits are:

- Shortening periods of congestion in the Kirkland area;
- Improving interchange operations at NE 116th Street by constructing a half single point urban interchange;
- Improving merging conditions from the northbound and southbound off-ramps at NE 85th Street;
- Improving water quality conditions in the project area by treating 321 percent of new impervious surfaces and by following WSDOT's new Highway Runoff Manual guidelines;
- Providing benefits to endangered salmon species by improving water quality conditions;
- Improving fish passage by installing a fish passage improvement (culvert or structure) on Forbes Creek;
- Mitigating for wetlands affected by project construction;
- Constructing five new noise walls and upgrading or relocating four existing walls to the edge of right of way;
- Implementing Context Sensitive Solutions design principles to improve aesthetics;
- Avoiding environmental impacts through collaborative efforts between environmental and design teams, resulting in low overall impacts;
- Making safety improvements at several high-accident locations.

The design and construction contract will include many provisions to protect the environment and to ensure compliance with project-specific permit conditions and project commitments.

## What types of improvements will be made?

### Lane Improvements

One way to visualize the changes proposed to the mainline is to imagine that you are driving along I-405, beginning in Bellevue and heading north toward Bothell and then returning to Bellevue. The following description of roadway improvements and Exhibit 4-1 follows this route and identifies the changes proposed at freeway interchanges as part of the Kirkland Nickel Project:

- **Northbound, North of SR 520 Interchange to NE 70th Street:** No changes are proposed for this section of freeway. This roadway will continue to have four general-purpose lanes and one HOV lane.
- **Northbound, NE 70th Street to NE 85th Street:** WSDOT will add one general-purpose lane for a total of four general-purpose lanes and one HOV lane. The existing drop lane (exit only) at the NE 70th Street off-ramp will become a through lane. The bridges over NE 85th Street will remain unchanged. Restriping over these bridges will accommodate the additional lane, resulting in narrower lanes and shoulders. The pavement will be widened to the outside (east) in select areas to provide space for emergency pullout areas.
- **Northbound, NE 85th Street to NE 116th Street:** WSDOT will add one general-purpose lane for a total of four general-purpose lanes and one HOV lane. The existing pavement will be widened by 10 to 15 feet to the outside (east) beginning at the on-ramp from NE 85th Street. Approaching NE 116th Street, the alignment will be shifted by approximately 20 feet to the east to accommodate the bridge reconstruction at the northbound I-405 bridge over NE 116th Street. (For improvements to the NE 116th Street interchange, see *Interchange Improvements* on page 4-17.)
- **Northbound, NE 116th Street to NE 124th Street:** WSDOT will continue the new general-purpose lane added from the south for a total of four general-purpose lanes and one HOV lane. The existing pavement will be widened by up to 15 feet to the outside (east) to accommodate the new lane. The new general-purpose

**Exhibit 4-1**  
Interchanges within the Project Area





**Looking north along I-405 at NE 128th Street**

**What is the Totem Lake Freeway Station/NE 128th Street Project?**

Sound Transit proposes to build a new bridge over I-405 at NE 128th Street and direct access ramps connecting the HOV lanes on I-405 with the new crossing.

Sound Transit proposes reconstructing the roadway and drainage system on NE 128th Street from 120th Avenue NE to the eastern limit of the Totem Lake Freeway Station Project.

lane will become a drop lane (exit only) at NE 124th Street.

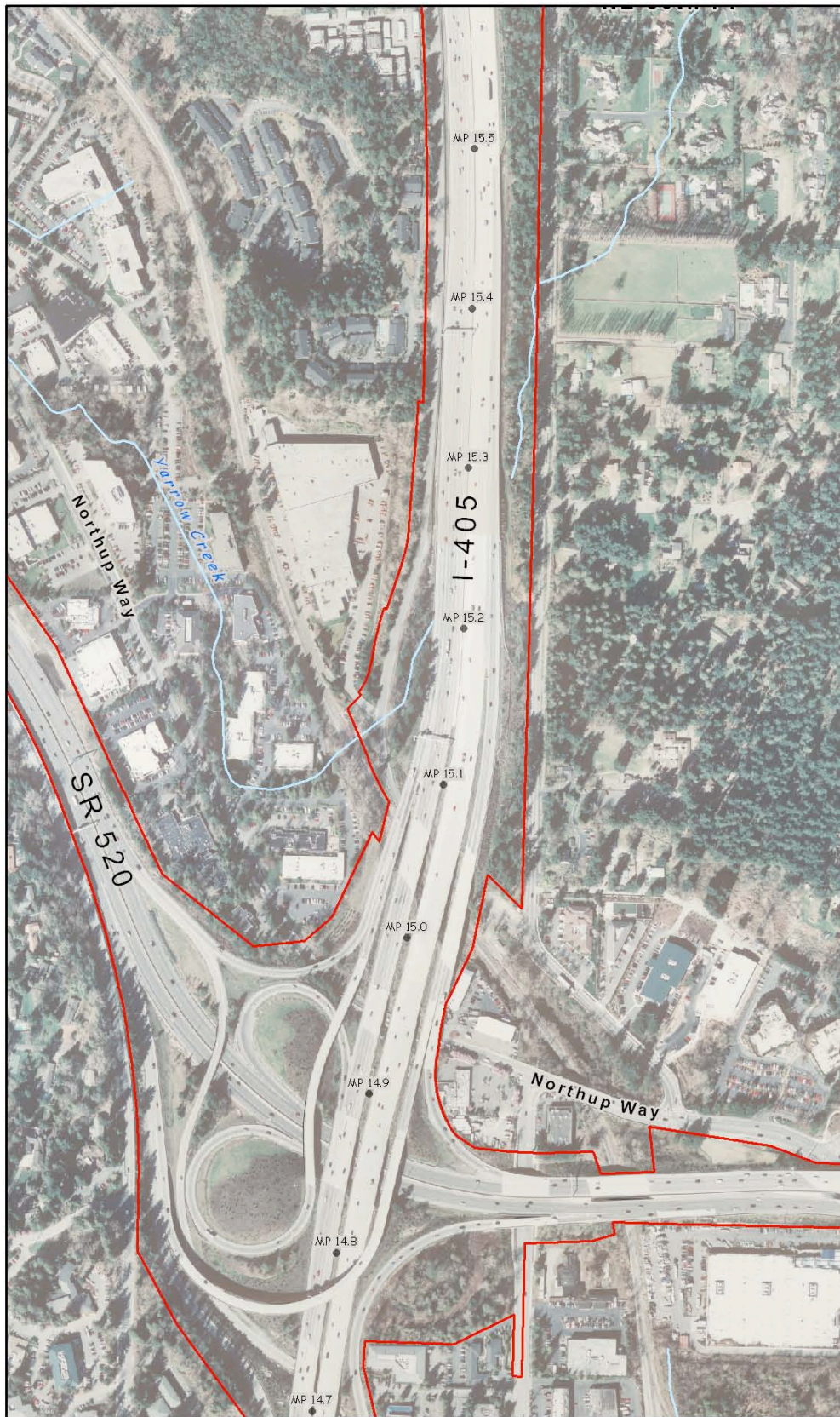
- **Northbound, NE 124th Street to SR 522:** North of the NE 124th Street off-ramp, WSDOT does not propose any changes to the roadway; it will remain as three general-purpose lanes and one HOV lane.
- **Southbound, SR 522 to NE 160th Street:** WSDOT will add one general-purpose lane in this area for a total of four general-purpose lanes and one HOV lane. The additional lane will connect to the existing merge lane from the eastbound SR 522 connector (to southbound I-405). The southbound off-ramp to NE 160th Street will be reconstructed to accommodate the mainline widening. WSDOT will widen the existing pavement by up to 15 feet to the outside (west) to accommodate the new lane.
- **Southbound, NE 160th Street to NE 124th Street:** WSDOT will add one general-purpose lane in this area for a total of four general-purpose lanes and one HOV lane. The existing pavement will be widened by up to 15 feet to the outside (west) from the NE 160th Street interchange southward to approximately southward where the median widens (approximately NE 145th Street). At that point, WSDOT will widen to the inside (east) south to approximately NE 132nd Street. South of there, WSDOT will restripe the pavement widened by Sound Transit's proposed project: the Totem Lake Freeway Station/NE 128th Street Project. The on-ramp at NE 160th Street, including the existing noise wall on top of the barrier along the roadway shoulder will also be reconstructed to accommodate the additional southbound lane.
- **Southbound, NE 124th Street to NE 116th Street:** WSDOT will add one general-purpose lane in this area for a total of four general-purpose lanes and one HOV lane. The project will restripe the pavement constructed as part of the proposed Sound Transit Totem Lake Freeway Station/NE 128th Street Project.
- **Southbound, NE 116th Street to NE 85th Street:** WSDOT will add one general-purpose lane in this area for a total of four general-purpose lanes and one HOV

lane. The existing pavement will be widened by 10 to 15 feet to the outside (west) north of the NE 85th Street interchange. The new lane will be created by restriping existing pavement resulting in narrower lanes and shoulders.

- **Southbound, NE 85th Street to NE 70th Street:** WSDOT will add one general-purpose lane for a total of four general-purpose lanes and one HOV lane. The bridges over NE 85th Street will remain unchanged. Restriping over these bridges will accommodate the additional lane, resulting in narrower lanes and shoulders. The pavement will be widened to the outside (west) in select areas to provide space for emergency pullout areas.
- **Southbound, NE 70th Street to SR 520:** WSDOT will add one general-purpose lane in this area for a total of four general-purpose lanes and one HOV lane. The existing pavement will be widened by 10 to 15 feet to the outside (west). The new lane will tie into the existing add lane for the connection to the SR 520 interchange, which is located approximately 330 feet north of the Bellevue city boundary (milepost 15.83).

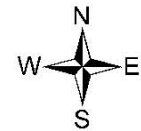
Exhibit 4-2 (Sheets 1 through 11) shows the major features of the proposed project.



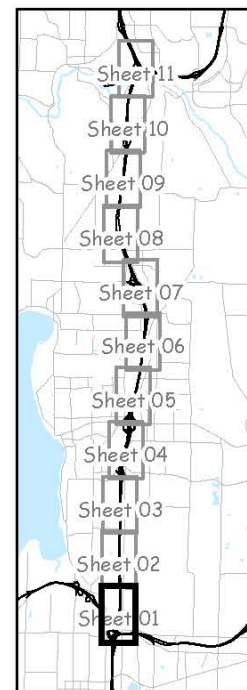


### Legend

- Streams
- Proposed ROW
- Existing ROW
- Proposed Retaining Wall
- Noise Wall
- Proposed Ecology Embankment
- Proposed Detention Pond or Vault
- New Impervious Surface
- Municipality



0 250 500  
Feet



### Southbound Improvements

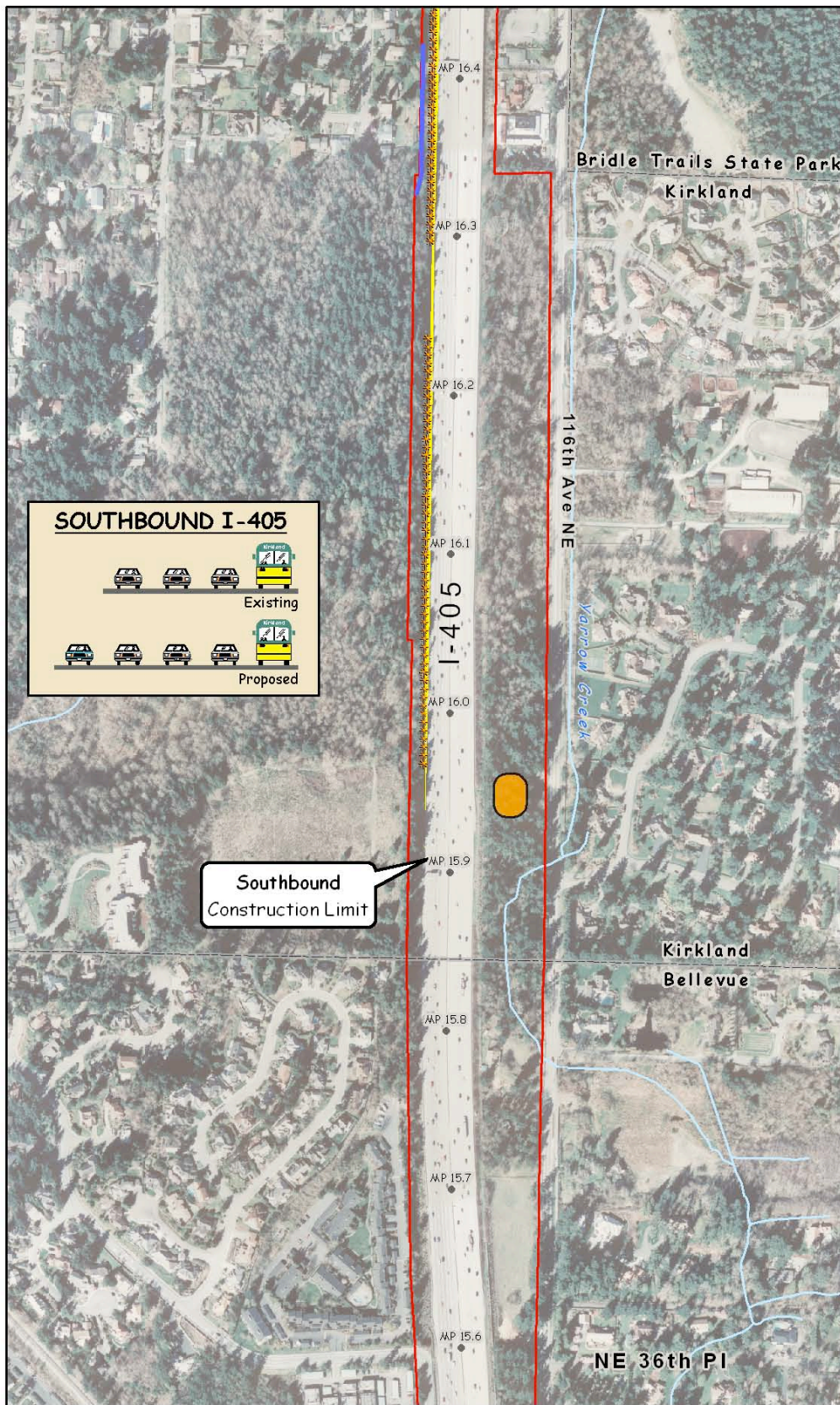
No changes are proposed  
for this section of freeway.

### Northbound Improvements

No changes are proposed  
for this section of freeway.

**Exhibit 4-2**  
**Major Project Features**  
Sheet 1 of 11



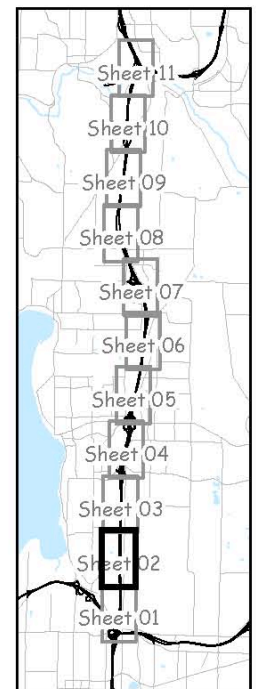


### Legend

- Streams
- Proposed ROW
- Existing ROW
- Proposed Retaining Wall
- Noise Wall
- Proposed Ecology Emabankment
- Proposed Detention Pond or Vault
- New Impervious Surface
- Municipality



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### Southbound Improvements

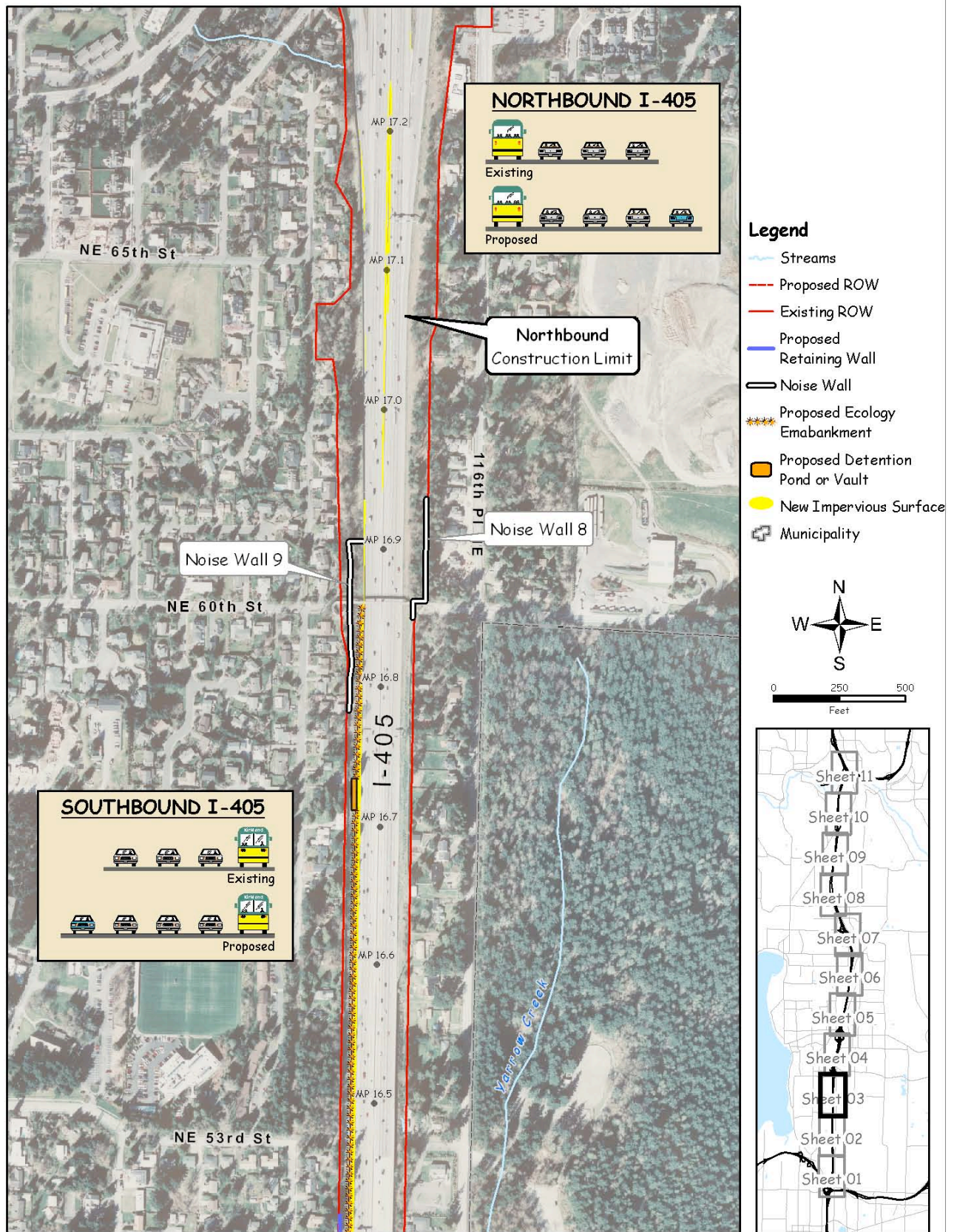
A new lane will be added by widening the existing pavement up to 15 feet to the outside (west). The new lane will tie into the existing add lane for the connection to the SR-520 interchange, which is located approximately 330 feet north of the Bellevue city boundary (milepost 15.83).

### Northbound Improvements

No changes are proposed for this section of freeway.

**Exhibit 4-2**  
**Major Project Features**  
Sheet 2 of 11





#### Southbound Improvements

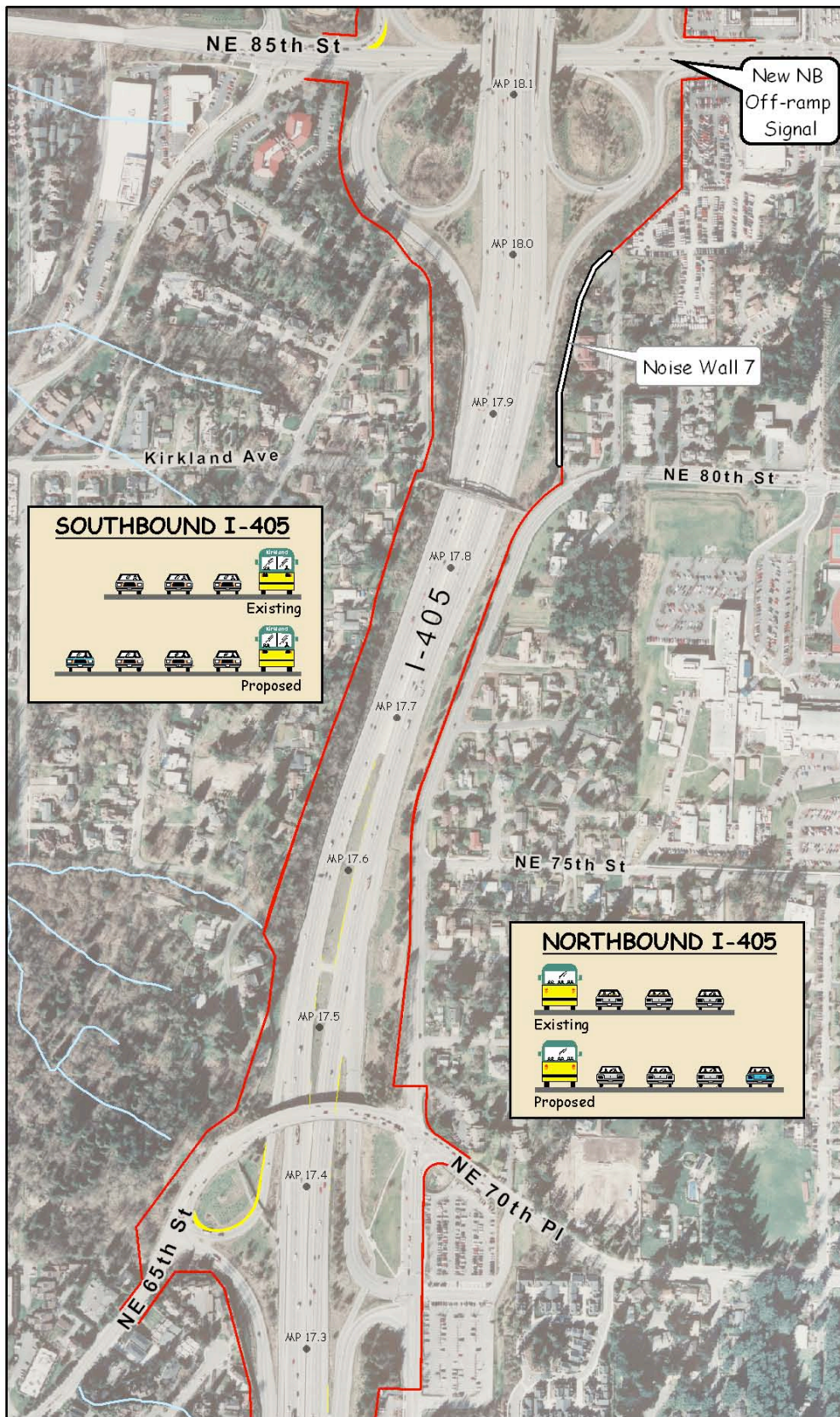
A new lane will be added by widening the existing pavement up to 15 feet to the outside (west). The new lane will continue by restriping the existing pavement.

#### Northbound Improvements

The existing drop lane (exit only) at the NE 70th Street off-ramp will become a through lane. The new lane will continue by restriping the existing pavement.

**Exhibit 4-2**  
**Major Project Features**  
Sheet 3 of 11





#### Southbound Improvements

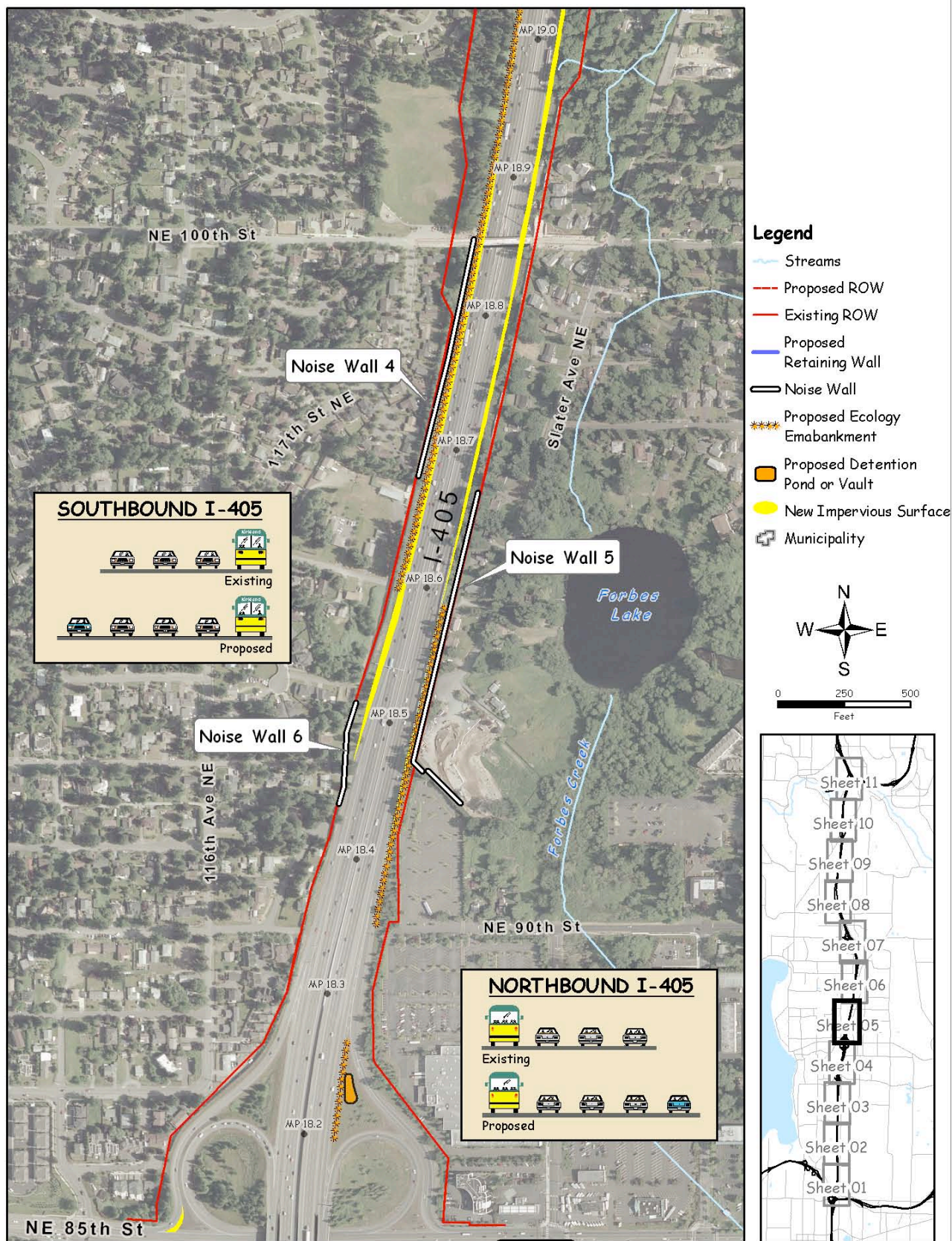
A new lane will be added by restriping in this area.

#### Northbound Improvements

The new lane will be added by restriping in this area. The pavement will be widened to the outside (east) in select areas to provide space for emergency pullout areas.

**Exhibit 4-2**  
Major Project Features  
Sheet 4 of 11





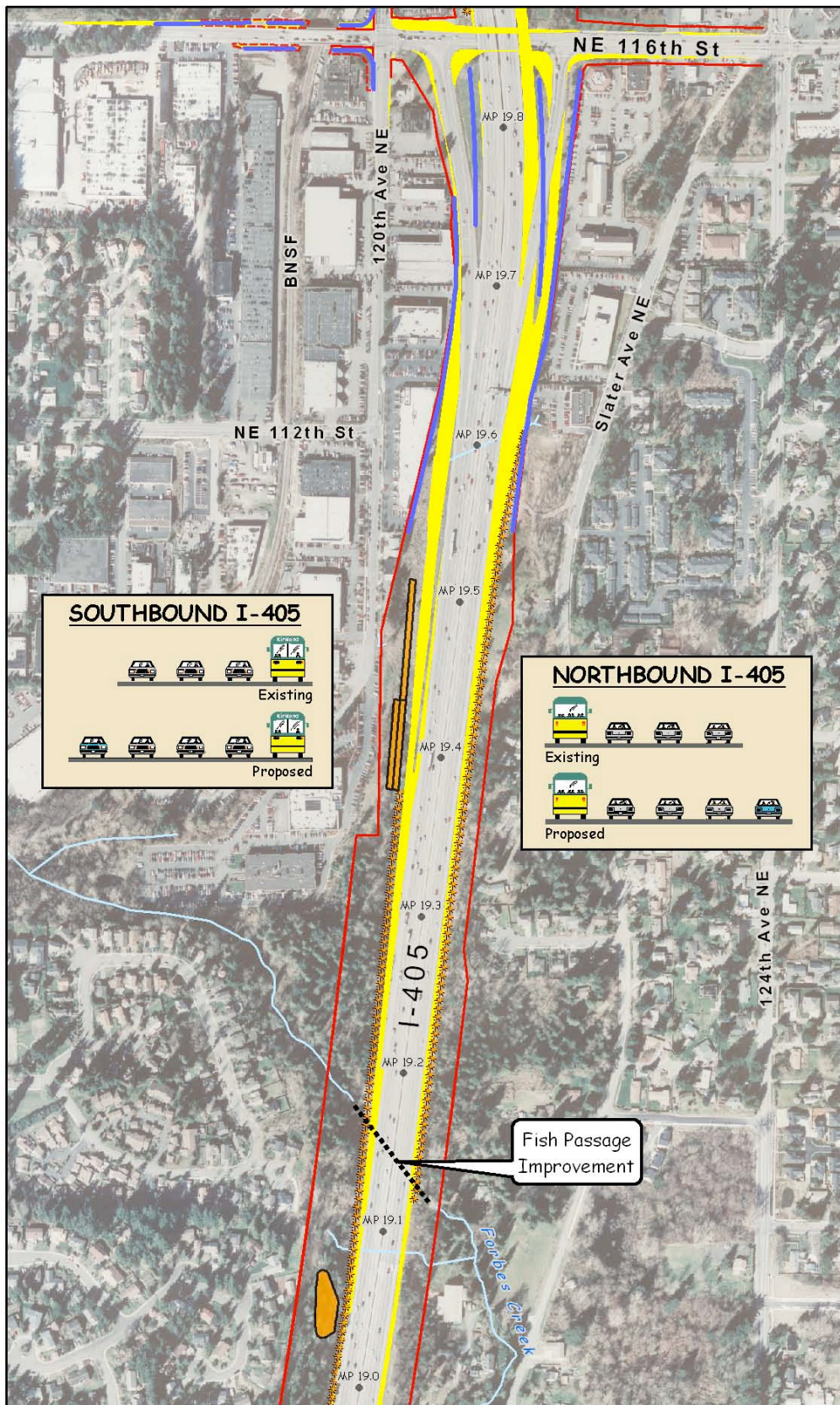
#### Southbound Improvements

The new lane will be added by widening the existing pavement up to 15 feet to the outside (west).

#### Northbound Improvements

The new lane will be added by widening the existing pavement up to 15 feet to the outside (east) beginning at the on-ramp from NE 85th Street.



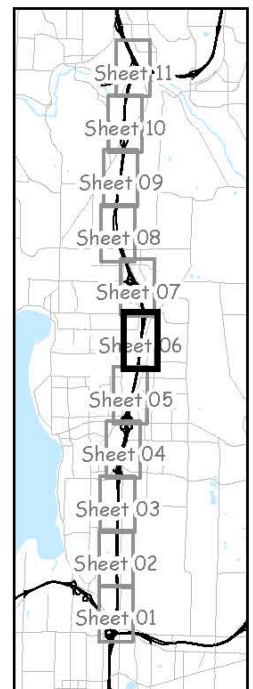


### Legend

- Streams
- Proposed ROW
- Existing ROW
- Proposed Retaining Wall
- Noise Wall
- Proposed Ecology Emabankment
- Proposed Detention Pond or Vault
- New Impervious Surface
- Municipality



0 250 500  
Feet



### Southbound Improvements

The new lane will be added by widening the existing pavement up to 15 feet to the outside (west).

### Northbound Improvements

The new lane will be added by widening the existing pavement up to 15 feet to the outside (east).

**Exhibit 4-2**  
**Major Project Features**  
Sheet 6 of 11



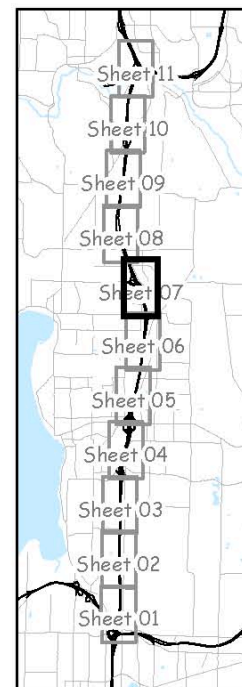


### Legend

- Streams
- Proposed ROW
- Existing ROW
- Proposed Retaining Wall
- Noise Wall
- Proposed Ecology Embankment
- Proposed Detention Pond or Vault
- New Impervious Surface
- Municipality



0 250 500  
Feet



### Southbound Improvements

The new lane will be added by restriping in this area. The project will tie into the proposed Sound Transit Totem Lake Freeway Station/NE 128th Street.

### Northbound Improvements

The new lane will be added by widening the existing pavement up to 15 feet to the outside (east). The new general-purpose lane will become a drop lane (exit only) at NE 124th Street.

**Exhibit 4-2**  
**Major Project Features**  
Sheet 7 of 11



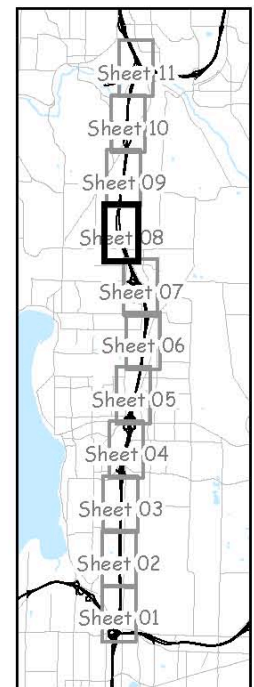


## Legend

- Streams
- Proposed ROW
- Existing ROW
- Proposed Retaining Wall
- Noise Wall
- Proposed Ecology Embankment
- Proposed Detention Pond or Vault
- New Impervious Surface
- Municipality



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Feet



## Southbound Improvements

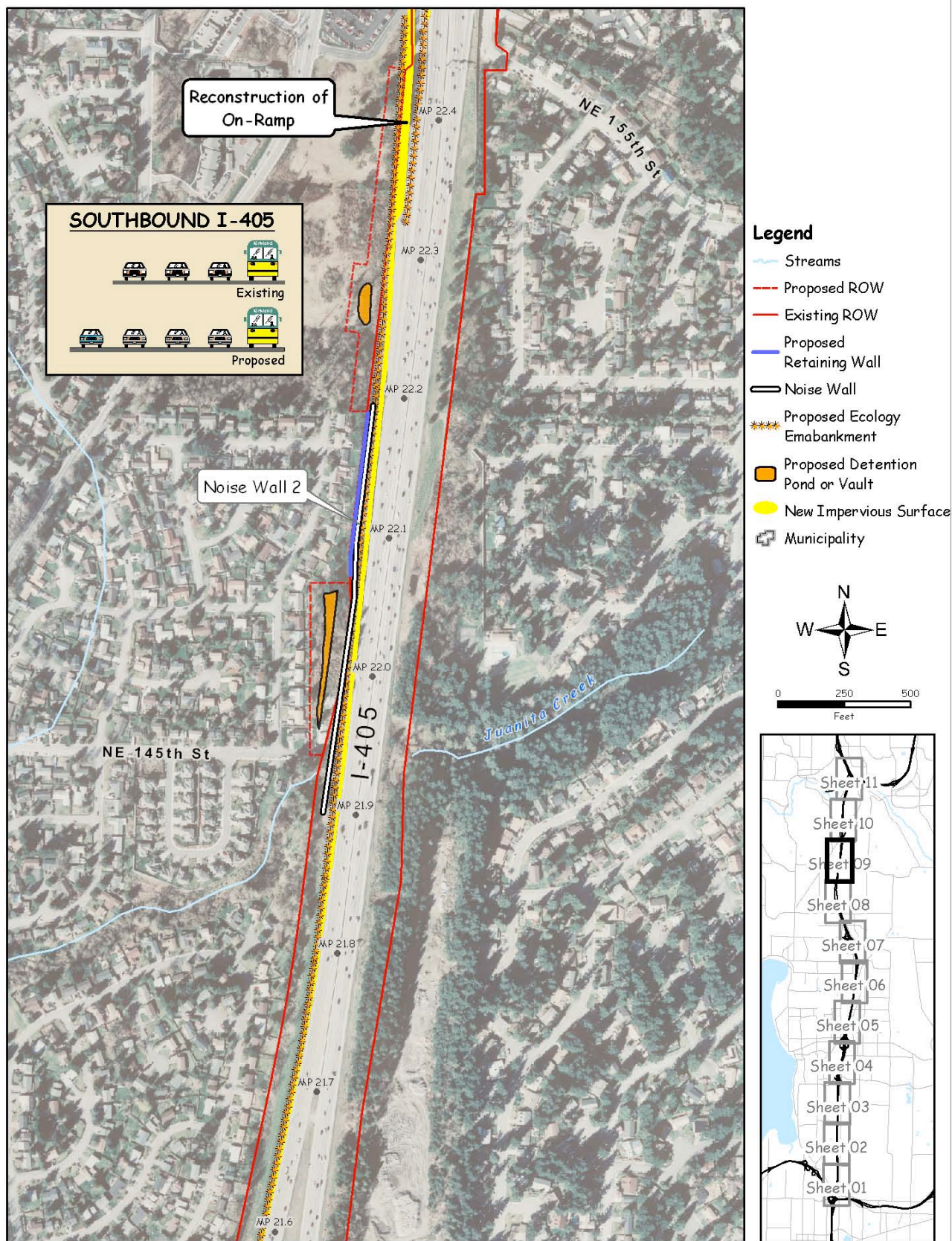
The new lane will be added by widening the existing pavement up to 15 feet to the inside (east) from NE 132nd Street to milepost 21.5 and to the outside (west) up to NE 160th Street Interchange.

## Northbound Improvements

No changes are proposed for this section of freeway.

**Exhibit 4-2**  
**Major Project Features**  
Sheet 8 of 11





#### Southbound Improvements

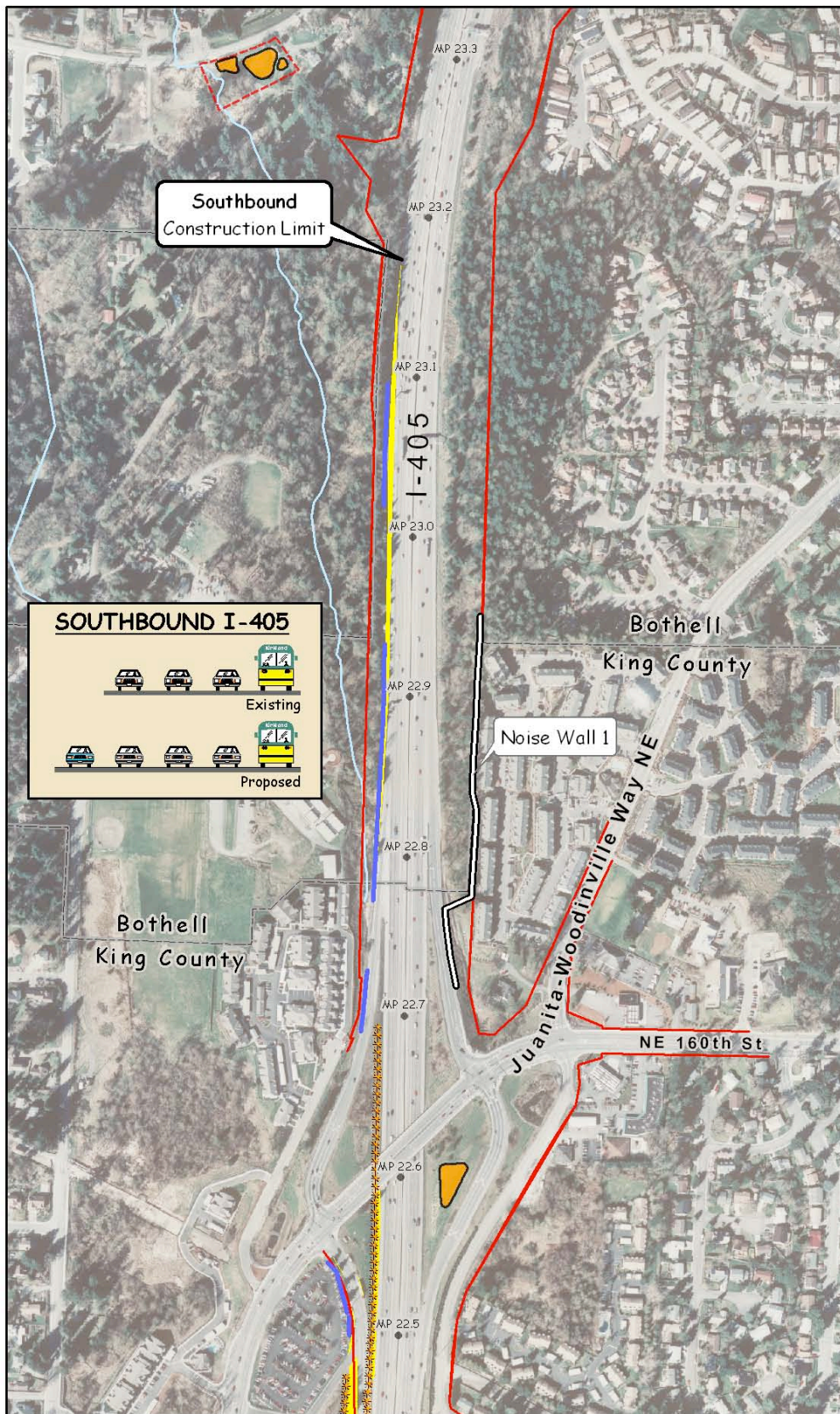
The new lane will be added by widening the existing pavement up to 15 feet to the outside (west) up to NE 160th Street Interchange. The southbound on-ramp from NE 160th street will also be reconstructed.

#### Northbound Improvements

No changes are proposed for this section of freeway.

**Exhibit 4-2**  
Major Project Features  
Sheet 9 of 11



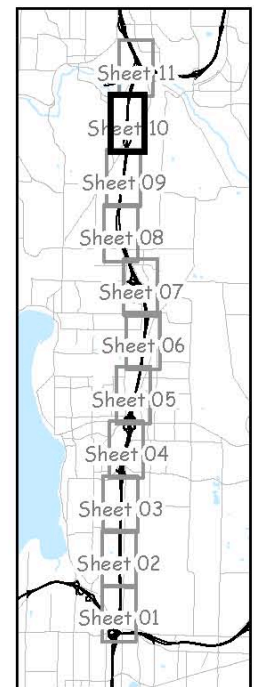


### Legend

- Streams
- Proposed ROW
- Existing ROW
- Proposed Retaining Wall
- Noise Wall
- Proposed Ecology Emabankment
- Proposed Detention Pond or Vault
- New Impervious Surface
- Municipality



0 250 500  
Feet



### Southbound Improvements

The new lane will be added by widening the existing pavement up to 15 feet to the outside (west). The additional lane will connect to the existing merge lane from the eastbound SR-522 connector (to southbound I-405).

### Northbound Improvements

No changes are proposed for this section of freeway.

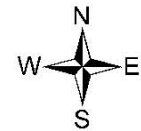
**Exhibit 4-2**  
**Major Project Features**  
Sheet 10 of 11



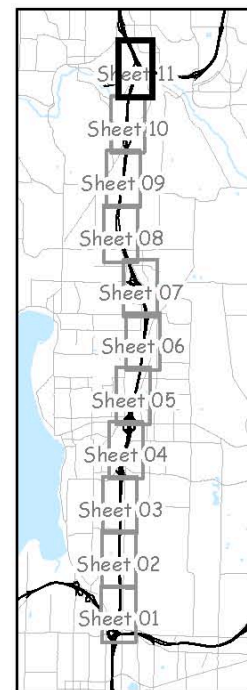


### Legend

- Streams
- Proposed ROW
- Existing ROW
- Proposed Retaining Wall
- Noise Wall
- Proposed Ecology Embankment
- Proposed Detention Pond or Vault
- New Impervious Surface
- Municipality



0 250 500  
Feet



### Southbound Improvements

No changes are proposed  
for this section of freeway.

### Northbound Improvements

No changes are proposed  
for this section of freeway.

**Exhibit 4-2**  
**Major Project Features**  
Sheet 11 of 11



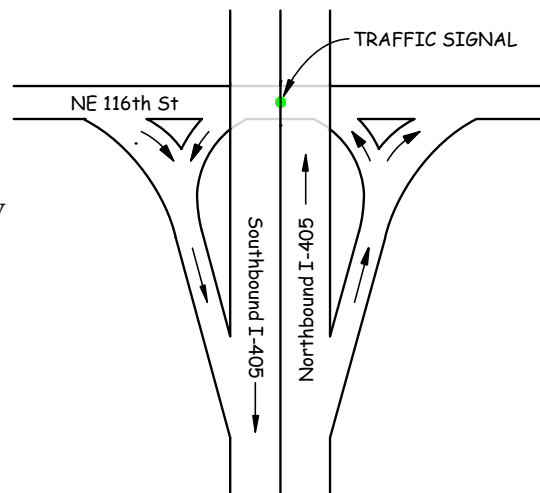
## Interchange Improvements

WSDOT will reconstruct the NE 116th Street interchange, which is presently configured as a half-diamond, to a half single point urban interchange (see Exhibit 4-3). The single point urban interchange design configuration provides through- and left-turn control from a single traffic signal and free right turns to and from on- and off-ramps. Drivers will benefit from better traffic signal phasing and improvements in intersection operations. Designers considered future lane improvements in this area by redesigning the interchange to require only minor structure widening and modifications to on- and off-ramps in the future.

Elements of the interchange improvements will include:

- **Phased removal and replacing the northbound and southbound I-405 bridges over NE 116th Street.** The bridges will be rebuilt to accommodate the new northbound and southbound lanes, and will provide standard vertical clearance over NE 116th Street.
- **Reconstructing the northbound off-ramp and southbound on-ramp in the new half single point urban interchange configuration.** This work will be compatible with construction of the new ramps at some future time; only ramp tie-in work will be necessary when the ramps are constructed.
- **Widening NE 116th Street on both sides of the interchange to accommodate dual-turn on- and off-ramps.** On the west side of the interchange, the widening (on both sides of the street) will extend for approximately 1,700 feet, tapering from approximately 58 feet at the interchange to 43 feet at the west end. East of the interchange, both sides of NE 116th Street will be widened for approximately 900 feet. The curb-to-curb width will be approximately 70 feet from the interchange to the intersection at 124th Avenue NE.
- **Replacing the overlay on the deck of the NE 116th Street bridge over the Burlington Northern Santa Fe (BNSF) railroad tracks.** The new bridge will have five traffic lanes with bicycle lanes and sidewalks on both sides of the roadway.

**Exhibit 4-3**  
*Half Single Point Urban Interchange*





- **Reconstructing the 120th Avenue NE and NE 116th Street intersection.** The purpose of this improvement is to accommodate an additional eastbound through lane on NE 116th Street, and to improve turning radii at corners.

There are several existing traffic safety issues that will be addressed by Kirkland Nickel Project improvements to interchanges. For example, accident data collected at the NE 85th Street interchange indicates a high accident location where traffic from the southbound off-ramp merges with westbound traffic on NE 85th Street. This condition is caused by off-ramp traffic directly merging into a right-turn-only lane to 114th Avenue NE. WSDOT will improve traffic safety at this location by rebuilding the off-ramp (approximately 200 feet) so that it intersects with the NE 85th Street westbound through lanes at an angle closer to 90 degrees.

Another high accident location occurs at the northbound off-ramp at the NE 85th Street interchange. This problem is associated with insufficient traffic gaps in eastbound NE 85th Street (SR 908) traffic that causes vehicles on the northbound off-ramp to queue up. WSDOT will install a traffic signal on NE 85th Street to alleviate the problem. Additionally, approximately 200 feet of the northbound off-ramp will be reconstructed so that vehicle queues will not back up onto I-405.

Traffic modeling indicates that, with or without the Kirkland Nickel Project, by 2030, traffic on the southbound off-ramp to NE 70th Place could back up onto the mainline. To prevent this situation, WSDOT will add a right-turn lane, approximately 350 feet long, to the off-ramp (see Exhibit 4-2, Sheet 4 of 11).

### **Other Improvements**

#### *Local roadway widening*

WSDOT will widen NE 116th Street as part of the reconfiguration of the interchange. WSDOT will also add a left-turn pocket on 120th Avenue NE at its intersection with NE 116th Street, and replace the overlay on the deck of the NE 116th Street bridge over the BNSF railroad tracks.



### *Retaining walls*

Widening I-405 for the Kirkland Nickel Project will require retaining walls along portions of the northbound NE 116th Street on- and off-ramps and at the southbound on-ramp from NE 160th Street. Retaining walls will also be necessary along NE 116th Street to accommodate street widening. Retaining walls will be constructed at other locations to avoid wetlands and to keep grading within the right of way.

### *Noise walls*

WSDOT will construct noise walls at five locations, provided that adjacent residents are in agreement. In addition, WSDOT will relocate four noise walls at or near the edge of the right of way.

Information about the specific location and height of noise walls is found in Chapter 5.2, Noise. The locations of the noise walls are also shown in Exhibit 4-2.

### *Slope stability and erosion management*

WSDOT has identified a landslide hazard area along the western side of I-405 between MP 23.03 and 23.08, just south of the SR 522 interchange. Seepage is evident in the slide face, and erosion has occurred to within 60 feet of the pavement edge. To prevent further deterioration of the slide face, any of the following features, or combination of these features, will be constructed:

- Horizontal drains installed into the landslide;
- Surface drains along the freeway to convey stormwater runoff to detention sites;
- Rock fill placed along the slide face to buttress selected areas; and
- Retaining walls, approximately 100 feet in length, constructed downslope of the freeway.

### *Culverts*

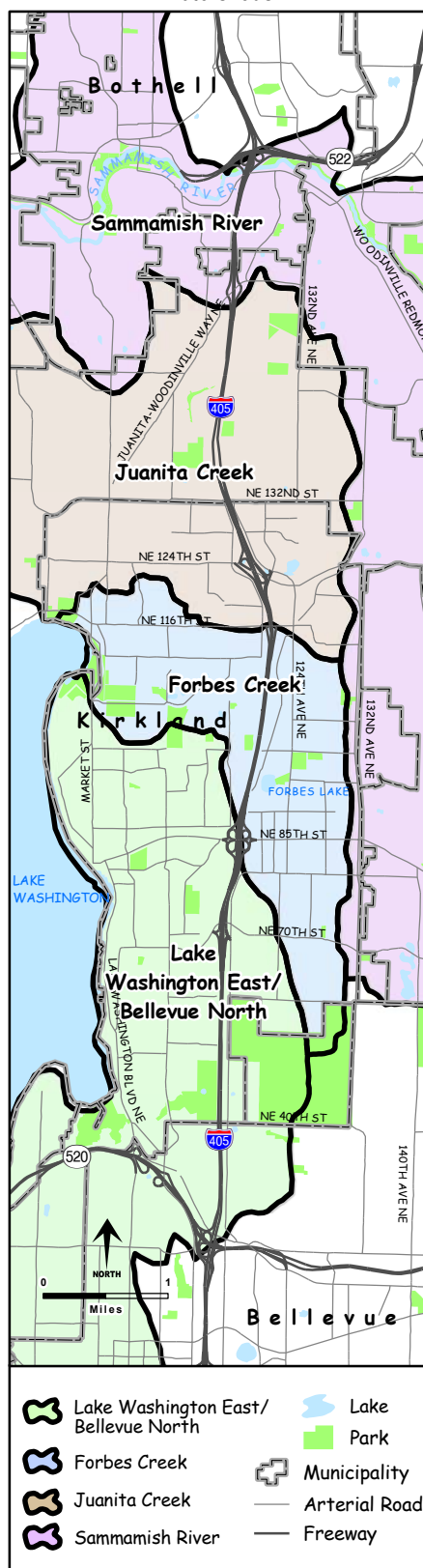
WSDOT anticipates that improvements to the freeway mainline and associated interchanges will impact some existing cross-culverts<sup>1</sup>. Each impacted culvert will be checked

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<sup>1</sup> A pipe or concrete box structure that conveys flow from open channels, swales, or ditches under a roadway.



**Exhibit 4-4**  
**Watersheds**



with WSDOT maintenance personnel to evaluate the proposed improvements and address any maintenance concerns. A table, Proposed Construction at Cross-Culverts, shows how culverts may be affected by roadway improvements, can be found in Appendix B. Associated culvert improvements include lengthening, connection to new drainage structures, stabilizing culvert ends with rock or retaining walls, and replacement.

Extensions will be added to existing drainage culverts in areas where the grading limits have been shifted to accommodate the new roadway widening. The extensions will be added upstream or downstream, depending on which culvert end is affected by the grading. During design, each proposed culvert extension was reviewed for potential impacts to stream areas. In locations where potential impacts were identified, construction of headwalls (retaining walls around culverts) or other retaining features were specified to avoid the need for culvert extensions.

A new culvert or other structure to provide improved fish passage under I-405 and to carry normal stream flows will be constructed at Forbes Creek, while the existing culvert will be used to pass stream high flows.

### **How will stormwater from the project be managed?**

#### **Stormwater Design Standards**

The Project Team has designed the stormwater management facilities for the project to comply with the following guidelines and procedures:

- WSDOT Highway Runoff Manual M 31-16, March 2004;
- WSDOT Hydraulics Manual M 23-03, March 2004.

The Kirkland Nickel Project spans four primary watersheds, listed south to north (Exhibit 4-4), as follows:

- Lake Washington East / Bellevue North
- Forbes Creek
- Juanita Creek
- Sammamish River



## Stormwater Treatment Facilities

In most cases, water quality treatment is required for 100 percent of new impervious surfaces along with detention of half of the two-year storm to the 50-year storm. Additional design references and guidelines have been used as they apply for local jurisdictional requirements. Designs of storm drainage improvements for the Kirkland Nickel Project will use the *WSDOT Highway Runoff Manual* (HRM) (2004) as the primary design reference.

Overall, the project will add 13.56 acres of net new impervious surface. In addition to providing enhanced treatment for the new pavement areas, 38.17 acres of presently untreated impervious surface will be retrofitted for enhanced water quality treatment. In total, the Kirkland Nickel Project will treat 51.73 acres of impervious surface, or 381 percent of the new impervious surfaces to be created by the project (Exhibit 4-5).

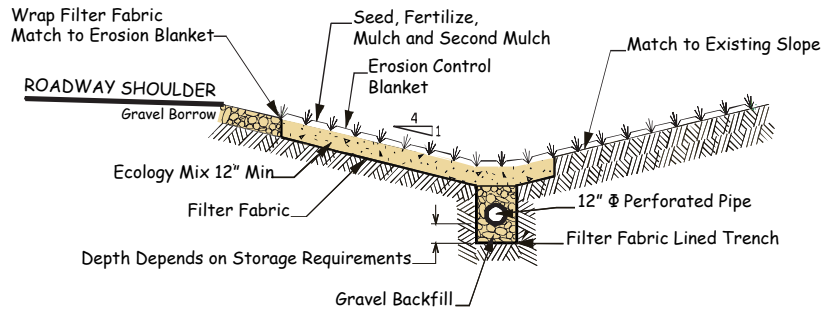
**Exhibit 4-5: Summary of Runoff Treatment by Watershed**

| Watershed                                 | Existing Impervious Area <sup>1</sup> (acres) | New Impervious Area (acres) | Impervious Area Treated (acres) | Percent of New Impervious Area Treated |
|---|---|-----------------------------|---------------------------------|--|
| Lake Washington<br>East Bellevue<br>North | 122.55  | 1.88                        | 6.49                            | 345%                                   |
| Forbes Creek                              | 26.17   | 7.92                        | 12.47                           | 157%                                   |
| Juanita Creek                             | 82.60   | 2.77                        | 17.31                           | 625%                                   |
| Sammamish<br>River                        | 31.81   | 0.99                        | 15.46                           | 1,562%                                 |
| <b>Project Total</b>                      | <b>263.13</b>                                 | <b>13.56</b>                | <b>51.73</b>                    | <b>381%</b>                            |

<sup>1</sup>Includes I-405, interchanges, and some surface streets where construction will occur

These improvements will be provided in accordance with the *WSDOT Highway Runoff Manual* in the form of combined treatment systems, ecology embankments, and constructed stormwater treatment wetlands. Ecology embankments (Exhibit 4-6) are the preferred method of treatment because of their flexibility in construction, enhanced treatment capabilities, and relatively low cost.

**Exhibit 4-6**  
*Ecology Embankment Cross-Section*



### Stormwater Flow Control

After water quality treatment, infiltration<sup>2</sup> will be used where it is cost effective and technically feasible to discharge stormwater or otherwise reduce flow control treatment volumes. Current information about surrounding soils and geologic formations indicates that infiltration is not a viable method of discharging stormwater in most of the project area. However, it is believed that pockets of well-draining soils exist in some upland areas along the corridor. Testing is currently being conducted to identify areas where infiltration may be viable.

### Drainage Collection and Conveyance

Existing drainage structures and systems will be retained in places where they will not be disturbed by new construction. Where space and access to structures make it possible, ecology embankments will be constructed to provide enhanced treatment of the runoff.

Generally, the proposed collection and conveyance systems will also include standard WSDOT catch basin and manhole structures connected by lateral and trunk drains to the treatment and detention facilities. Pipe sizes will generally range from 12 to 30 inches in diameter and will be installed on grades and at depths necessary for proper vertical clearances and hydraulic performance. Inlets will be placed at locations where it is necessary to limit the spread of design storm flows into the travel lanes, as required by the *WSDOT Hydraulics Manual* (2004).

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#### What are detention ponds?

A detention pond is a facility for temporarily holding stormwater runoff so that it can be released at a controlled rate. A detention vault is similar to a pond, but with more hard-sided construction.

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<sup>2</sup> Movement of water through the soil surface into the soil.



### ***How will the project incorporate community design preferences?***

The Kirkland Nickel Project is being planned, developed, and designed in accordance with guidelines called Context Sensitive Solutions (CSS), also referred to as Context Sensitive Design. These guidelines provide a means of incorporating community design preferences into the project.

### ***How are CSS guidelines being incorporated into the Kirkland Nickel Project?***

Throughout development of the Kirkland Nickel Project, local input has been encouraged to ensure that community concerns are addressed. WSDOT formed the Kirkland Advisory Committee (KAC) to review Kirkland-area “view to” issues such as interchange locations/ designs, noise wall locations/ treatments, traffic, safety, structures, lighting, and landscape. Several KAC members also serve on a corridor-wide CSS Aesthetics Committee, which focuses on the “view from the corridor” issues. The Aesthetics Committee’s work, combined with the KAC, has determined an I-405 theme of “Culture, Nature, and Progress,” that will carry into corridor-wide and local I-405 designs.

WSDOT established a memorandum of understanding with the City of Kirkland that commits to continued interaction and review by the KAC and Aesthetics Committee throughout the design process. A CSS Urban Design Guidelines Manual, incorporating KAC design preferences, is being developed to coordinate with the scope of work in the Kirkland Nickel contract documents.

### ***How does the CSS process work?***

Through a series of interactions with the public, elected officials, WSDOT, and City of Kirkland staff, the I-405 CSS team has developed design themes to guide future improvements along the corridor.

WSDOT’s CSS team prepared illustrations and photos of design features, beginning with examples of local baseline designs and compared them to options implemented in other parts of the country. Committee preferences were then narrowed down to features that could be incorporated into the Urban Design Guidelines Manual for the I-405 Corridor. These preferences were later reviewed by WSDOT’s Technical

Committee, KAC and Aesthetics Committees to ensure they fit with corridor-wide aesthetics and maintenance standards.

### ***How will the Kirkland Nickel Project be constructed?***

#### **At-grade Construction**

The at-grade construction work for new lanes and shoulders will include the removal of existing asphalt and concrete surfaces, clearing and grading adjacent areas, laying the aggregate roadway foundation, placing asphalt surfaces, and installing stormwater management facilities. Construction equipment such as backhoes, excavators, front loaders, pavement grinders, jack hammers, trucks will be used along with grading and paving equipment.

Approximately 80 acres of clearing and grading will be required for the additional lanes. Project earthwork will require approximately 175,000 cubic yards of cut and 265,000 cubic yards of fill.

Construction of the Forbes Lake East wetland mitigation site will require excavation and removal of 20,000 to 30,000 cubic yards of material. Construction of the wetland mitigation sites, which is expected to take place over six to nine months, will generate 2,000 to 3,000 truck trips on 124th Avenue NE and other arterials. Construction of the wetland mitigation sites will require removal of 6,000 cubic yards of material.

#### **Bridge Structures**

The project's only new bridge structures will replace the I-405 bridges over NE 116th Street. No in-water work is associated with these bridges. Construction equipment used for the bridges will include cranes, pile drivers (if allowed by resource agencies), drilling rigs and augers, backhoes and excavators, jack hammers, concrete pumping equipment, and slurry processing equipment.

#### **Construction Staging Areas**

Staging areas in unused right of way will provide room for employee parking, large equipment storage, and material stockpiles. Construction staging will occur within areas of existing or newly-acquired right of way adjacent to the mainline; however, this does not mean that staging will not occur elsewhere. The contractor will likely find additional locations for storage and staging. WSDOT will allow staging areas in already disturbed parts of the right of way without



trees. Staging for construction will not occur in environmentally-sensitive areas, as defined by the King County Sensitive Areas Ordinance, which includes wetlands, streams or alongside streams. Possible staging areas can include the following:

- Right of way areas along the project limits, which are generally adequate to perform the work with typical machinery, including room for onsite staging;
- Spaces between the mainline and the southbound NE 70th Street on- and off-ramps;
- Space within the northwest quadrant of the NE 85th Street loop ramp;
- Triangular areas between the on- and off-ramps and the mainline at the northwest, northeast, and southwest quadrants of the NE 85th Street interchange;
- Space within the southbound NE 116th Street on-ramp;
- Northbound and southbound along the mainline, between NE 116th Street and the BNSF bridges where extra-wide WSDOT right of way exists. The northbound side has a wetland area near NE 116th Street that will be delineated by high visibility fencing, but the remaining workable area is greater than 1.5 acres;
- Spaces within the northeast, southeast, and southwest quadrants of the NE 124th Street interchange; and
- Spaces within the northwest, northeast, southwest, and southeast quadrants of the NE 160th Street interchange.

The Biological Assessment prepared for the project contained the following performance standards for staging areas:

- No contractor staging areas will be allowed within 90 meters (300 feet) of any wetland, stream, or river with listed species.
- Temporary materials storage piles will not be placed within the 100-year floodplain between October 1 and May 1. Material used within 12 hours of deposition will not be considered a temporary material storage pile. All temporary material storage piles will be

protected by appropriate BMPs to prevent sediments from leaving the piles.

- When practicable, all equipment fueling and maintenance will occur more than 90 meters (300 feet) from the nearest wetland, ditch, or flowing or standing water. (Fueling large cranes, pile drivers, and drill rigs over 90 meters (300 feet) away may not be practicable.)
- Project contractors will confine construction projects to the minimum area necessary to complete the project.
- Project contractors will flag boundaries of clearing limits associated with site access and construction to prevent ground disturbance outside the limits.

### **Traffic Maintenance**

A conceptual traffic staging plan has been developed to illustrate how construction can occur with minimal disruptions to existing traffic patterns and capacity on the I-405 mainline, the interchanges, and the local roadways. The plan's primary objectives are to maintain existing traffic capacity, and to streamline the construction schedule.

Detour agreements with the local agencies will be obtained by the contractor after contract award. A traffic control plan will need to be approved by WSDOT prior to construction.

I-405 is periodically used by vehicles with over-sized loads to transport freight through the Central Puget Sound area. Both during and after construction, WSDOT will continue to use its existing permit process to accommodate these vehicles. Oversized loads should be scheduled for off-peak periods, subject to their special permits.

### ***What is the project construction schedule?***

Construction is expected to take place in stages, with the entire construction phase lasting up to six years beginning in 2005 and ending in 2011. It is likely that the Kirkland Nickel Project will be constructed in two stages. Stage 1, which is approximately 1.8 miles long, will provide immediate relief in Kirkland's worst congestion areas. WSDOT expects that the first stage of roadway construction, scheduled to begin in the latter half of 2005 and last until 2007, will include the following major elements:



- Construction of new northbound and southbound lanes and shoulders of I-405 between NE 85th Street and NE 124th Street;
- Reconstruction of the northbound off-ramp of the NE 116th Street interchange and minor modifications to the southbound on-ramp. If funding is available, reconstruction of the southbound on-ramp will be completed;
- Construction of related stormwater management facilities and noise walls between NE 85th Street and NE 124th Street;
- Reconstruction of the northbound and southbound bridges over NE 116th Street in preparation for the interchange configuration that will take place in Stage 2;
- Construction of a fish passage facility on Forbes Creek; and
- Construction of wetland mitigation for the entire project.

WSDOT anticipates that the second stage of the project, scheduled to begin in 2009 and last into 2011, will be made up of the following roadway construction elements:

- Restriping of the northbound lane and shoulder from the NE 70th Street interchange to the NE 85th Street interchange;
- Construction of a new southbound lane and shoulder on I-405 from the SR 522 interchange to the NE 124th Street interchange;
- Construction of a new southbound lane and shoulder from the NE 85th Street interchange to the add lane north of the SR 520 interchange;
- Construction of related stormwater management facilities and noise walls between NE 70th Street and NE 85th Street and NE 124th Street and SR 522; and
- Reconfiguration of the NE 116th Street interchange into a half single point urban interchange and widening and improvements to NE 116th Street and the NE 116th Street/120th Avenue NE intersection.

It should be noted that Stage 2 requires some narrower lane and shoulder widths to avoid rebuilding the interchanges at NE 70th, NE 85th, and NE 124th Streets. Future projects for this area are expected to rebuild each of these interchanges.